Commission observed that the rule modifications adopted in the various Part 1 orders would result in discrepancies and/or redundancies between certain of the new Part 1 rules and existing service-specific rules, and the Commission delegated to the Wireless Telecommunications Bureau ("Wireless Bureau") the authority to make conforming edits to the Code of Federal Regulations consistent with the rules adopted in the *Part 1* proceeding.[330] The Wireless Bureau subsequently issued an order making conforming edits to the service-specific competitive bidding rules in accordance with the *Part 1 Fifth Report and Order*.[331] The Wireless Bureau's *Conforming Edits Order*[332] modified the DBS competitive bidding rules in Part 100 in a manner similar to the proposal in this proceeding. With respect to the Part 100 rules, the *Conforming Edits Order* eliminated all redundant Part 100 competitive bidding rules[333] and retained the service-specific rules that are located in Part 100.[334]

98. We agree with commenters that there are some service-specific rules that should be retained. As such, we retain only the DBS specific competitive bidding rules in Part 100[335] and apply otherwise the Part 1 general auction rules to DBS.[336] The general competitive bidding rules were established to standardize the Commission's method of competitive bidding. Therefore, we move the service specific sections from Part 100 to Part 25 of the Commission's rules and apply the Part 1 auction rules.[337] By this action, we eliminate unnecessary and redundant rules that are located in other sections of the Commission's rules. Therefore, we will apply the general competitive bidding rules in Part 1 of the Commission's rules and move Sections 100.71 and 100.77 to Part 25.[338]

99. The transfer disclosure requirement for Section 100.80 of the Commission's rules has a six-year disclosure period while the general auction rules have a three-year disclosure period as reflected in Section 1.2111.[339] The DBS transfer disclosure provision requires any entity that acquires a DBS license through competitive bidding and seeks to transfer its license within six years of the initial license grant to

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[329] *See also Amendment of Part 1 of the Commission's Rules — Competitive Bidding Procedures, Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use*, Third Report and Order and Second Further Notice of Proposed Rule Making, 13 FCC Rcd 374 (1997) (modified by Erratum, DA 98-419 (rel. March 2, 1998) ("*Part 1 Third Report and Order*"). In the *Part 1 Third Report and Order*, the Commission streamlined its auction procedures by adopting general competitive bidding rules applicable to all auctionable services.

[330] *Part 1 Fifth Report and Order* 15 FCC Rcd at 15330 ¶ 78.

[331] *See In the Matter of Amendment of Parts 21, 22, 24, 25, 26, 27, 73, 80, 90, 95, 100, and 101 of the Commission Rules - Competitive Bidding*, WT Docket No. 97-82, 2001 Biennial Regulatory Review, Order, DA 02-847 (released April 11, 2002)("*Conforming Edits Item*").

[332] *Id.*

[333] *Id. See, e.g.* §§100.71-100.76, 100.78-100.79.

[334] *See, e.g.* § 100.71 (which establishes auction authority for DBS); § 100.77 (once a winning bidder has made its down payment, the Commission will use the long-form satellite service application); and § 100.80 (transfer disclosure).

[335] Eliminate §§100.72-80.

[336] *See Conforming Edits Item* .

[337] 47 C.F.R. § 100.77

[338] New § 25.148 (d) and (e).

[339] 47 C.F.R. § 1.2111(a); *citing Notice* at ¶ 42.

file with its transfer application, the associated transfer agreement, and other related agreements regarding the transfer, including the purchase price.[340] The reporting requirements enable the Commission to monitor more closely the degree to which the Commission is complying with Congress' directive in Section 309(j)(3)(B) to ensure that "new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants...."[341] We will apply the Commission's Part 1 transfer disclosure rule to DBS. We believe that a three-year disclosure period is not only consistent with the Commission's general competitive bidding rules but also provides sufficient time to assist the Commission in keeping track of all transfers of licenses issued via auctions.[342] Therefore, we eliminate Section 100.80 of the Commission's rules and apply the Part 1 three-year transfer disclosure provision.

100. The long form provision set forth in Section 100.77 of the Commission's rules requires winning bidders to submit information describing the type of service that will be provided, the technology that will be employed, specific frequencies and orbital positions. In addition, the winner is required to file information describing its technical and operating parameters. This information is specific to DBS and therefore we retain the long-form requirement for DBS auction winners. We will move Section 100.77 to Part 25.

101. In authorizing the Commission to use competitive bidding, Congress mandated that the Commission "ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services."[343] In addition, Section 309(j)(3)(B) of the Act provides that in establishing eligibility criteria and bidding methodologies the Commission shall promote "economic opportunity and competition . . . by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women."[344] The Commission's designated entity preferences apply based on an entity's qualification as a small business.[345] We note that minority- and women-owned

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[340] 47 C.F.R. § 100.80.

[341] 47 U.S.C. § 309(j)(3)(B).

[342] *See In the Matter of Implementation of Section 309(j) of the Communications Act-Competitive Bidding*, 9 FCC Rcd 2348 (1994). Transfer disclosure requirements should not be a burden on the licensees inasmuch as the documents to be submitted to the Commission will be prepared for other purposes in any event. Any competitive concerns raised by the possible disclosure of sensitive information contained in purchase agreements or similar documents can be addressed by the provision in Section 0.457 and 0.459 of our Rules providing for nondisclosure of information. 47 C.F.R. §§ 0.457 and 0.459.

[343] 47 U.S.C. § 309(j)(4)(D).

[344] 47 § U.S.C. 309(j)(3)(B).

[345] *See* 47 C.F.R. § 1.2110(a). Although the Commission previously extended designated entity preferences to minority- and women-owned businesses, as well as to small businesses, following the Supreme Court's rulings in *Adarand Constructors, Inc. v. Pena*, 515 U.S. 200 (1995), and *United States v. Virginia, et al.*, 518 U.S. 515 (1996), the Commission concluded that it would not be appropriate to adopt special provisions for minority-owned and women-owned businesses pending the development of a more complete record on the propriety of race- and gender-based provisions for future auctions. *See Part 1 Fifth Report and Order*, 15 FCC Rcd at 15318-20 at ¶¶ 45-50 (discussing constitutional standards and governmental interests that would justify the use of race- or gender-based preferences).

businesses and rural telephone companies that qualify as small businesses may take advantage of the special provisions we have adopted for small businesses.[346]

102. In the *Competitive Bidding Second Report and Order,* the Commission concluded that it would determine whether to adopt designated entity preferences such as bidding credits on a service –by– service basis.[347] In the *Competitive Bidding Second Memorandum Opinion and Order*, the Commission stated that it would define eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements and other characteristics of each particular service in establishing the appropriate threshold.[348] The *Part 1 Third Report and Order*, while it standardizes many auction rules, provides that the Commission will continue a service-by-service approach to defining small businesses.[349]

103. In the *DBS Auction Order,* the Commission noted that having "designated entity provisions for future DBS auctions may be appropriate, particularly if it auctions spectrum in small blocks."[350] The *DBS Notice* encouraged commenters who favor adoption of designated entity provisions to discuss whether the Commission should establish generic designated entity provisions applicable to all future DBS auctions or whether we should adopt designated entity provisions on a case-by-case basis, depending on the number of channels available at a given auction.[351] We received no comment on this issue.

104. In the past, the Commission has declined to adopt designated entity provisions for DBS.[352] In the *DBS Auction Order,* the Commission did not adopt a designated entity provision for the first DBS auction in large part because of the high implementation costs of satellite service and the lack of interest expressed by the potential beneficiaries.[353] These circumstances have not changed. Although the Commission remains committed to providing economic opportunity and competition, avoiding excessive concentration of licenses, and ensuring access to new and innovative technologies by disseminating licenses among a wide variety of applicants, we conclude that there is no basis in the record for changing the DBS competitive bidding rules to adopt a designated entity provision at this time.

C. Technical Matters

105. Our goal in reviewing DBS technical rules is to ensure that they reflect today's technology and promote maximum technical flexibility for DBS licensees, while ensuring protection of DBS systems

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[346] *See Part 1 Fifth Report and Order*, 15 FCC Rcd at 15319, ¶ 48; *see also* FCC Report to Congress on Spectrum Auctions, WT Docket No. 97-150, *Report*, FCC 97-353 at 29 (rel. Oct. 9, 1997) (finding that special provisions for small businesses also increase opportunities for minority- and women-owned businesses).

[347] *Competitive Bidding Second Report and Order,* 9 FCC Rcd at 2388-89 at ¶ 229.

[348] *Implementation of Section 309(j) of the Communications Act – Competitive Bidding*, Second Memorandum Opinion and Order, 9 FCC Rcd 7245, 7269 at ¶ 145 (1994) (*"Competitive Bidding Second Memorandum Opinion and Order"*).

[349] *See Part 1 Third Report and Order.*

[350] *DBS Auction Order* at ¶ 217.

[351] *Id.*

[352] *See DBS Auction Order* at ¶ 217.

[353] *DBS Auction Order* at ¶¶ 214-217.

from interference. The Commission's proposal to incorporate the Part 100 DBS rules into Part 25 presumes that many of the general technical requirements for satellite services now contained in Part 25 would be applied to the DBS service.[354] Commenters in general support the consolidation of Part 100 into Part 25, although EchoStar cautions that the Commission should not allow the procedural simplification to cause substantive changes to the technical requirements for DBS systems.[355] As stated above, we are adopting our proposal to consolidate Part 100 with Part 25. In the following paragraphs, we address separately each of the technical issues raised in the *Notice*, as well as those related issues raised by the commenters.

106. The *Notice* proposed to create a new rule that would require DBS licensees to operate in accordance with Appendices 30 and 30A to the ITU Radio Regulations.[356] Appendices 30 and 30A contain the ITU BSS and feeder-link Plans, as well as international provisions for implementing BSS systems. These Appendices also provide a mechanism for implementing systems whose technical parameters differ from the existing Plan assignments (*i.e.*, a procedure to modify the Plans).[357] The commenters in general support of this proposal to require DBS licensees to operate in accordance with Appendices 30 and 30A of the International Radio Regulations[358] and we will adopt it with certain modifications.[359] The rule we adopt differs from the proposed rule in that it no longer specifies that until the Plan modification procedures are completed, DBS operations "cannot cause harmful interference to assignments that conform to the Plans or other services sharing the same frequency bands, nor can it receive protection from assignments that conform with the Plans or other services sharing the same frequency bands." We have modified our proposed rule so that it does not repeat the portion of the revised Section 25.111 (discussed below) regarding the protection that our DBS systems will receive when operating within parameters different from those specified in Appendices 30 and 30A.

107. *Prohibition on exceeding Technical Limits in ITU Annex 1.* Under the ITU Radio Regulations, an Administration whose proposed DBS system exceeds the technical limits in Annex 1 to Appendices 30 and 30A[360] must seek the agreement of the Administrations whose Plan assignments or other

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[354] *See* Part 25, Subparts B, C, and D (Applications and Licenses, Technical Requirements, and Technical Operations).

[355] EchoStar cites as possible examples the power limits and antenna performance requirements imposed in the closely spaced environment of the FSS which it argues would be inappropriate to apply to the DBS service. *See* Reply Comments of EchoStar at 13.

[356] *Notice* at ¶ 43. This new rule, Section 25.148(f), updates Section 100.21 of the Commission's rules to refer to the proper provisions in the Radio Regulations.

[357] *See* ITU Radio Regulations, Appendix 30 and 30A, Article 4. The United States must initiate this modification procedure for three reasons; 1) in order to receive protection from interference from the systems of other Administrations, if a US-licensed DBS system uses parameters different than those specified in the ITU BSS and feeder-link Plans; 2) if it proposes to use an orbital location not assigned to the United States in the ITU BSS and feeder-link Plans; or 3) if it causes more interference to another Administration's services or systems than the existing U.S. Plan assignment. If the U.S. successfully completes the Plan modification procedure on the licensee's behalf, the actual parameters of the licensee's system will be then included in the Plans, and it will be protected both from subsequent modifications to the Plans and from interference from other services sharing the bands.

[358] *See, e.g.*, Comments of DIRECTV at 23; Comments of Tempo at 3; and Comments of SkyBridge at 7.

[359] *See* new §25.148(f).

[360] Annex 1 to Appendices 30 and 30A contain threshold values for determining whether a service of an Administration is affected by a proposed modification to the Plans. These limits are intended to protect other (continued....)

radiocommunication systems are affected by the proposed modification. In the *Notice,* the Commission proposed to revise our rules to consider systems that exceed the technical limits contained in these Annexes if there are reasonable assurances that the agreement of the affected Administration(s) can be obtained.[361] In the *Notice,* the Commission also recognized that for other satellite services (*e.g.,* FSS), the United States regularly undertakes coordination of its satellite systems, and that it believed this approach would be appropriate for the DBS service.[362]

108. The comments overwhelmingly support this proposal.[363] DIRECTV states that this change will provide additional flexibility for the development of systems that may exceed Annex 1 technical limits, but that are nonetheless acceptable to affected Administrations.[364] We also, however, recognize that there are differences between the coordination process applicable to other services such as the FSS and the agreement-seeking process required by Appendices 30 and 30A. Satellite coordination generally places some burden on both parties involved to reach a mutually acceptable solution, while the agreement-seeking process puts the regulatory burden on the party seeking agreement. Accordingly, we stress that the burden shall be on the applicant to show that the agreement of the affected Administration(s) can be obtained.[365] For example, we would consider favorably evidence that coordination with the potentially affected Administration(s) has been successfully completed or extensive technical analyses demonstrating that the impact on the services of the affected Administration is negligible. DBS applicants or licensees however, assume the risk that agreement with other Administrations may not be obtained. If the necessary agreements are not obtained, the system will not become a part of the Plans and will not receive protection internationally from other radiocommunication systems.

109. The ITU Radio Regulations require completion of the Plan modification procedure before a DBS system can claim protection from interference from assignments that conform to the Plan. Accordingly, for those systems for which the Plan modification procedure has been undertaken, we will condition the DBS license on its ultimate completion. Specifically, until such time as the Plan modification procedure is complete, the FCC may require a licensee to modify its operations in the event that harmful interference is caused to the conforming assignments of another Administration, and we will require the non-conforming DBS licensee to accept interference from the assignments of other Administrations.

110. *Application requirements.* In the *Notice*, the Commission proposed to adopt a new Section 25.111(c) that would require applicants to provide the Commission with all necessary information if the

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Administration's Plan assignments, FSS networks, and terrestrial systems. The limits include various pfd limits, and changes in the overall equivalent protection margin or equivalent noise temperature. These limits must be met by proposed BSS systems or the U.S. must seek the agreement of the affected Administration on behalf of the U.S. DBS operator.

361 *Notice* at ¶ 45 (*See, e.g.,* if it is shown in an FCC application that the effect on the foreign system(s) is negligible).

362 *Id.*

363 Comments of EchoStar at 12-13; Comments of Tempo at 3; Comments of USSB at 5.

364 Comments of DIRECTV at 23.

365 *See* new §25.148(f).

applicant seeks a modification of the current ITU BSS and feeder-link Plans,[366] as well as the necessary information to forward to the ITU regarding use of tracking, telemetry and control ("TT&C") frequencies.[367] The *Notice* also proposed to modify its rules by adding a new Section 25.114(c)(22). This proposed new section would codify the requirement that applicants submit an analysis demonstrating whether they exceed the limits specified in Annex 1 to Appendices 30 and 30A.[368] The new Section 25.114(c)(22) proposed requiring applicants to provide the information requested in Annex 2[369] to Appendices 30 and 30A of the International Radio Regulations, and to provide sufficient technical showing that the proposed system could operate satisfactorily if all assignments in the BSS and feeder-link Plans were implemented.[370] In addition, the *Notice* sought comment on whether DBS applicants should supply technical information in addition to that required by Part 25.[371]

111. Although DIRECTV supports the Commission's proposal to state explicitly the information that licensees must provide when seeking to modify the Plans, it suggests that since ITU requirements remain in flux and change frequently, the Commission should issue guidelines regarding DBS ITU regulatory compliance instead of specifying necessary ITU information in the rules.[372] We agree with DIRECTV's comment that specific references to the ITU Radio Regulations could become obsolete.[373] Moreover, we recognize that in practice, applicants now normally provide this information to the Commission. Nonetheless, it is important for the protection of U.S. DBS systems that information is filed at the ITU in a timely and accurate manner, and we believe that clearly stating our filing requirements in our rules will facilitate our application process, and expedite the international regulatory process for our applicants. Accordingly, we adopt wording that will provide the appropriate guidance to applicants while simultaneously remaining relevant despite the possibility of modifications to the ITU Radio Regulations. We believe that the current wording of the new rules achieve our goal of providing sufficient guidance to

[366] *See Notice* at ¶46. An Administration seeking to modify the Plans must submit to the ITU information requested in Appendix 4 of the ITU Radio Regulations. *See* Section 4.2.6 of Appendix 30 and Appendix 30A.

[367] For DBS systems, the United States must submit Appendix 4 information to notify the ITU Radiocommunication Bureau of the frequencies that will be used for tracking, telemetry and control operations. The ITU Radiocommunication Bureau requests that the Appendix 4 information be submitted in electronic format.

[368] *See Notice* at Appendix A, proposed modified Section 25.114(c)(22)(ii). Annex 1 to Appendices 30 and 30A provide limits for determining when another Administration is affected by a proposed modification to the Plans.

[369] Annex 2 to Appendices 30 and 30A was suppressed at WRC-2000. The data elements formerly specified in Annex 2 were moved to Appendix 4. *See* Appendix 4 for a list of the basic characteristics to be furnished in notices relating to space stations in the broadcasting-satellite service and their associated feeder links. The submission of the transmit and receive, co-polarized and cross-polarized, satellite antenna gain contours should be made electronically, according to the format specified by ITU Circular. *See* ITU's Circular Letter CR/58, dated October 21, 1996 ("Circular Letter C/58").

[370] *See Notice* at Appendix A, proposed Section 25.114(c)(22)(i). In Region 2, an affected Administration is, in part, determined by an analysis that calculates the change in the overall equivalent protection margin, and that includes in its reference, all Plan assignments and any previous Plan modifications. *See* paragraph 2 of Annex 1 to Appendix 30.

[371] *See Notice* at ¶ 23.

[372] Comments of DIRECTV at 24.

[373] The ITU Radio Regulations are modified at every World Radio Conference, which take place at two to four year intervals. After each WRC, specific references to the ITU regulations included in the C.F.R. that were modified by the Conference would be obsolete until updated by our rulemaking process.

applicants without becoming so overly explicit as to become inapplicable with every subsequent modification to the ITU Rules. In its comments, EchoStar states that it does not believe additional technical information beyond Section 25.114 is needed to process DBS applications.[374] We do not agree. DBS operations are closely governed by Appendices 30 and 30A and their associated Plans. To evaluate the impact of the proposed system on existing Plan assignments and other services, it is essential that during the licensing process the Commission receive an analysis demonstrating whether the limits in Annex 1 are exceeded. To initiate a Plan modification, the United States must submit this analysis, along with the information requested in Appendix 4 of the ITU Radio Regulations. Without this information, the Commission cannot fulfill ITU requirements on behalf of the applicant, nor can it make a decision regarding the international implications of the proposal before it. In addition, consistent with DIRECTV's recommendation, we have updated the language of the rule proposed in the *Notice* to reflect changes in the ITU Radio Regulations made after the *Notice* was adopted. Specifically, we revise Section 25.111(c) to specify that DBS applicants must provide certain information regarding TT&C frequencies.[375] We also adopt the proposed rule Section 25.114(c)(22) with editorial modifications to reflect the relocation of Annex 2 information adopted at WRC-2000.[376]

112. *Supplemental technical requirements.* In the *Notice*, we sought comment on whether it is necessary to develop regulations to supplement the technical and regulatory requirements specified in Appendices 30 and 30A of the ITU Radio Regulations.[377] We raised this question because U.S. DBS systems can use technical parameters that differ from those contained in Appendices 30 and 30A and on which the ITU BSS and feeder-link Plans were developed. Many of these differing parameters now used by U.S. DBS licensees represent advances in technology, or concessions to consumer demands that were not foreseen at the time the ITU BSS and feeder-link Plans were developed. For example, as recognized in the *Notice*, U.S. DBS systems use digital instead of analog modulation techniques, have lower downlink eirp, and have extended the original intended service area delineated by the radio frequency beams of the Plans.[378] In addition, operational DBS systems typically use larger feeder-link transmit earth station antennas than described in the Plans and have implemented receive earth station antennas with smaller diameters than were assumed during the creation of the Plans.

113. Regarding possible supplemental regulations, Tempo offers a number of suggestions to reduce administrative burdens on both applicants and staff, and to facilitate interference-free operation by co-located providers.[379] In its comments, Tempo suggests that in the absence of private coordination,[380] the

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[374] Comments of EchoStar at 2.

[375] *See* new § 25.111(c). WRC-2000 modified Article 2 of Appendices 30 and 30A to include new coordination requirements for TT&C operations using the guardband frequencies. *See* Section 2.2 of Appendices 30 and 30A in the *Final Acts*. One other editorial change in the text has been the deletion of the word "modified" when describing the frequency assignment that has been incorporated into the Plan.

[376] WRC-2000 suppressed Annex 2 to Appendices 30 and 30A. The information contained therein was relocated to Appendix 4.

[377] *Notice* at ¶ 47.

[378] *Id.*

[379] Typically, the U.S. has not assigned all channels to a single operator at a given orbit location. Rather, channel assignments are distributed among co-located operators and the potential for interference exists between these co-located providers.

Commission should adopt additional technical rules to facilitate the chances of successfully operating two independent, co-located systems on an interference-free basis. Tempo's suggested rules include: (1) requiring that cross-polarization isolation for space station antennas conform to ITU specifications; (2) requiring DBS licensees at the same orbital position to operate their TT&C frequencies on opposite circular polarizations; (3) limiting uplink eirp to levels consistent with the requirements of Section 25.204 of the Commission's rules; and (4) maintaining the basic 0.4 degree orbital spacing between co-located satellites.[381] No commenters opposed Tempo's suggestions, although DIRECTV questioned the clarity of Tempo's proposal to maintain 0.4 degree orbital spacing and urged that the Commission not alter the orbital spacing defined in Appendix 30 of the Radio Regulations.[382] We will address each of Tempo's proposed rules below.

114. Tempo raises the important issue of the cross-polarization isolation of DBS spacecraft and associated earth station antennas.[383] U.S. DBS providers are designing spacecraft antennas that do not meet the cross-polarization isolation patterns in Appendix 30.[384] In the BSS and feeder-link Plans, adjacent channels overlap partially in frequency.[385] At a given BSS orbit location, interference between channels is avoided by transmitting in opposite polarizations[386] on the even and odd numbered channels. In turn, the satellite antenna must radiate or receive power in its reference polarization, and avoid radiating or receiving significant amounts of power in the opposite, or cross-polarization. The ratio of power transferred by an antenna radiating in the reference polarization to another antenna receiving in the cross-polarization is known as the cross-polarization isolation ratio and is normally measured in decibels ("dB").

115. Because the Region 2 BSS and feeder-link Plans are based on cross-polarized, adjacent channels that overlap in frequency (also the basis for our domestic channelization scheme) it is important

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[380] Tempo and other commenters endorse a Commission policy of encouraging co-located licensees to coordinate amongst themselves to resolve any potential or existing interference issues. *See* Comments of Tempo at 5, Comments of Primestar at 20, and Comments of DIRECTV at 25.

[381] *See* Comments of Tempo at 5.

[382] *See* Reply Comments of DIRECTV at 8.

[383] *See* Comments of Tempo at 4-5.

[384] The cross-polarization patterns on which the Region 2 Plans were based are given in Section 3.13.3 of Annex 5 to Appendix 30 and Section 4.6.3 of Annex 3 to Appendix 30A. These reference patterns provide for cross-polarization isolation values of between 27 to 30 dB over the primary coverage area, as defined by the half-power beamwidth.

[385] *See, e.g.,* Downlink Channel 1 extends from 12.212 – 12.236 GHz, Channel 2 extends from 12.22658 – 12.25058 GHz, and Channel 3 extends from 12.24116 – 12.26516 GHz. Thus there is a 9.42 MHz overlap between Channels 1 and 2, and a similar overlap between Channels 2 and 3. *See* Table 4, of Appendix 30 for the Region 2 BSS channel assignments.

[386] Polarization is the property of an electromagnetic wave that describes the time-varying direction and amplitude of the electric field vector (*i.e.*, orientation). States of polarization are described in terms of the figures traced as a function of time by the projection of the extremity of a representation of the electric vector onto a fixed plane in space that is perpendicular to the direction of propagation. In general, the polarization is elliptical and is traced in a clockwise or counterclockwise sense, as viewed in the direction of propagation. If the major and minor axes of the ellipse are equal, the polarization is said to be "circular." If the minor axis of the ellipse is zero, the polarization is said to be "linear." Rotation of the electric vector in a clockwise sense is designated "right-hand polarization," and rotation in a counterclockwise sense is designated "left-hand polarization."

that both satellite and earth station antennas exhibit adequate cross-polarization discrimination. This is particularly true when adjacent channels are assigned to two different, co-located operators. In our rules governing the fixed-satellite service, we require that space stations be designed to provide a ratio of on-axis co-polarized gain to on-axis cross-polarized gain of at least 30 dB.[387] To facilitate the ability of a U.S. DBS spacecraft to share frequencies with other U.S. DBS systems, particularly when two or more operators share the same nominal orbital position, we will adopt a new rule that will similarly require DBS space station antennas to be designed to achieve a cross-polarization isolation ratio of at least 30 dB.[388] This new requirement will apply to new applications and applications for replacement satellites, or to modifications to existing authorizations that significantly change the design of the proposed satellite.

116. Tempo also suggests that the Commission require DBS licensees at the same orbital position to operate their TT&C frequencies on opposite circular polarizations.[389] Considering the limited amount of spectrum necessary for TT&C functions[390] and the fact that the guardbands of the Plans provide 12 MHz of spectrum for TT&C operations at both the upper and lower bounds of the allocated band,[391] we believe that there is sufficient spectrum available to accommodate the TT&C requirements of multiple, co-located DBS licensees. We currently rely on coordination between our licensees to resolve any incompatibilities in TT&C operations, an approach that we believe allows DBS operators the greatest flexibility in system operation. Therefore, we do not find it necessary to adopt additional regulations regarding the use of TT&C frequencies. We note however, that our rules require C-band space stations in the fixed-satellite service to be capable of switching polarization sense upon ground command.[392] A similar capability in DBS space stations could facilitate coordination of TT&C operations among co-located DBS licensees, particularly in cases where a space station is moved from one location to another. Accordingly, we encourage our DBS operators to design their space stations with such polarization-switching capabilities for their TT&C operations.

117. Tempo recommends that DBS operators limit uplink eirp to levels consistent with the requirements of Section 25.204 of the Commission's rules.[393] Section 25.204(b) places limits on earth station eirp in bands above 15 GHz shared coequally with terrestrial radiocommunication services, in order to facilitate sharing with these services.[394] This rule was not intended to facilitate sharing among

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[387] 47 C.F.R. § 25.210(i).

[388] *See* new § 25.215.

[389] Comments of Tempo at 5.

[390] *See, e.g.*, Letter from Pantelis Michalopoulos, Counsel to EchoStar, to Magalie Roman Salas, Secretary (dated August 27, 1999) specifying 1.2 MHz of spectrum for the uplink TT&C functions of the EchoStar 5 or 6 satellites, and 1.2 MHz for the downlink TT&C functions.

[391] Section 3.9 of Annex 5 to Appendix 30 and Section 4.1 of Annex 3 to Appendix 30A.

[392] 47 C.F.R. § 25.210(a)(3).

[393] Comments of Tempo at 5.

[394] Section 25.204(b) states that "in bands shared coequally with terrestrial radio-communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station operating in frequency bands above 15 GHz shall not exceed the following limits except as provided for in paragraph (c) of this section:

+64 dBW in any 1 MHz band for $\theta<0°$

+64+3θ dBW in any 1 MHz band for $0°<\alpha<5°$

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space stations. Nor does it appear that this rule is relevant to BSS feeder-link earth stations, except for the small band segment 17.7-17.8 GHz that is shared with terrestrial services. We note, however, that by incorporating the Part 100 rules into Part 25, Section 25.204(b) will now apply to DBS feeder-link earth stations in the 17.7-17.8 GHz frequency band segment.[395] At this time we do not find it necessary to adopt any additional requirement extending uplink eirp limits to other portions of the feeder-link allocation (*i.e.*, 17.3-17.7 GHz).

118. Tempo also recommends that the Commission maintain the basic 0.4 degree orbital spacing between co-located satellites to reduce the potential for interference between operators with cross-polarized channel assignments.[396] Appendices 30 and 30A of the International Radio Regulations base the Region 2 BSS and feeder-link Plans on grouping of the space stations in nominal orbital locations of ± 0.2° from the center of the satellite cluster.[397] In the BSS and feederlink Plans, channels at a given orbital location are specified such that oppositely polarized channels ("RHCP" or "LHCP") are located at opposite edges of the cluster, or 0.4 degrees apart. Although the United States initially followed this scheme when assigning channels at a given orbit location, DBS licensees have increasingly indicated a desire for greater flexibility regarding the placement of their satellites within the cluster.[398] Moreover, at locations, where all 32 channels are assigned to a single operator, we have been particularly willing to allow the operator considerable freedom to locate the spacecraft anywhere within the cluster boundaries. As a result, location of U.S. DBS satellites no longer strictly adheres to a 0.4 degree even/odd channel separation scheme, nor do we believe that returning to such a scheme would further the interests of U.S. DBS providers as it is contrary to the Commission's policy of allowing operators maximum flexibility in designing their systems. Further, as discussed above, we are adopting cross-polarization isolation requirements for new DBS satellites. We believe that this new cross-polarization isolation requirement in combination with the requirement to coordinate among the co-located licensees will afford DBS providers the desired flexibility regarding specific location of their satellites, without causing unacceptable interference to co-located operators.

119. *Coordination among licensees at the same orbit location.* The Commission has assigned DBS channels at the same orbital position to different entities, and recognizes the need to ensure their interference-free co-existence. The close proximity of satellites located at the same orbital location increases the potential for interference between adjacent channels. This is especially true on the uplink if the earth station transmit eirps are not similar. Appendices 30 and 30A allow a space station to be located anywhere within ± 0.2 degrees of the assigned orbital location,[399] as long as the agreement of other

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where θ is as defined in paragraph (a) of this section."

[395] We note too that the fixed-satellite service is currently subject to the requirements of Part 25. Thus, Section 25.204(b) may already be considered applicable to BSS feeder links that are by definition FSS allocations.

[396] Comments of Tempo at 5.

[397] Administrations may locate their satellites at any orbital position within the cluster, provided they obtain the agreement of Administrations having assignments to space stations in the same cluster. *See* Section B of Annex 7 to Appendix 30 and § 4.13.1 of Annex 3 to Appendix 30A.

[398] *See MCI Telecommunications Corporation Application for Minor Modification and Clarification of License Conditions,* 14 FCC Rcd 9966 (1999). MCI requested to operate its assigned channels at any location within the 109.8° W.L. - 110.2° W.L. cluster.

[399] For example, for the orbital position of 110° W.L., any location between 109.8° W.L. and 110.2° W.L.

Administrations with channel assignments at the same orbital location is obtained.[400] This ITU requirement does not address the domestic situation where adjacent channels at the same location are assigned to different operators. The *Notice* proposed to apply a policy requiring licensees at the same orbit location to coordinate among themselves to arrive at a mutually acceptable solution to any potential or existing interference between their operations.[401] In addition, DBS licensees with channels assigned at a particular orbital location have expressed a need for some flexibility with respect to the location of their satellites and associated channels.[402] In situations involving U.S. licensees with channels assigned at the same orbital position, we believe that allowing DBS operators to coordinate amongst themselves in order to arrive at a mutually acceptable solution regarding the location of their satellites and use of their associated frequency assignments, including TT&C frequencies, will result in maximum flexibility and efficient use of the orbit and spectrum resource.

120. Tempo suggests that the Commission should encourage coordination between licensees and/or applicants prior to the filing of applications with the Commission.[403] In particular, Tempo suggests that co-located operators should share proposed technical changes prior to filing applications with the Commission. We endorse Tempo's suggestion and strongly encourage licensees and applicants to resolve any potential difficulties prior to filing an application. Such pre-coordination would expedite the application process. While commenters expressed general support for private coordination between DBS applicants and licensees, some requested that the Commission make clear that the primary burden of coordination falls upon the newcomer to a particular orbital location that seeks to deploy a technology inconsistent with established operations.[404] We decline to make such a definitive statement regarding the burden of coordination. The Commission has historically maintained that all affected parties must cooperate in the coordination process to resolve interference issues.[405] We do, however, recognized that the operator of an in-orbit satellite is limited in its ability to make technical or operational changes to its system. The proposed new satellite, which is often still in early stages of its design, may be in the best position to make the adjustments required to effect coordination.

121. Tempo also expresses concern that the Commission should closely monitor any system based on private coordination between potentially affected parties.[406] In the fixed-satellite service, United States

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[400] This ITU requirement is moot at the Region 2 U.S. orbital locations since the U.S. is the only Administration with channel assignments at these positions.

[401] *See Notice* at ¶ 48.

[402] *See In re Application of MCI Telecommunication Corporation for Modification of DBS Authorization*, 14 FCC Rcd 9966 (1999), where MCI requested to operate its assigned channels at any location within the 109.8° W.L. - 110.2° W.L. cluster.

[403] Comments of Tempo at 4.

[404] *See* Comments of Primestar at 20 and Reply Comments of Echostar at 13.

[405] *See Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service*, 11 FCC Rcd. 13788 (1996), *American Telephone and Telegraph Co.*, 10 FCC Rcd 12132 (1995), *Hughes Communications Galaxy, Inc.*, 7 FCC Rcd. 4627, 4673 (1992), *GE American Communications, Inc.*, 6 FCC Rcd 31 (1991), *Hughes Communications Galaxy, Inc.*, 5 FCC Rcd 3423 (1990), *Satellite Transponder Leasing Corporation*, 5 FCC Rcd. 1651 (1990), *American Satellite Company*, 5 FCC Rcd. 1186 (1990), *GE American Communications, Inc.*, 3 FCC Rcd 6871 (1988).

[406] *See* Comments of Tempo at 5. Tempo states further that no party should be allowed unilaterally to take action that could adversely affect another operator prior to successfully completing coordination.

satellites operating in the C- and Ku-bands are successfully licensed and operated in a 2-degree spacing environment that depends almost entirely upon private coordination between adjacent U.S. applicants and licensees. Our public notice and comment process affords potentially affected operators the opportunity to make known their concerns at the time an application is filed before the Commission. We expect that the same process will work successfully for applicants and licensees in the DBS service. Although we strongly encourage applicants and licensees to resolve conflicts privately, the Commission will be the final arbiter of disputed matters, and we will enforce our rules diligently as necessary.

122. *Network control center.* As a further means for preventing interference among co-located DBS satellites, we also proposed extending to DBS licensees the Section 25.272(a) requirement to establish a network control center to monitor and coordinate space station activities.[407] Although Tempo supports the Commission's proposal,[408] other commenters generally oppose requiring DBS licensees to establish a network control center. DIRECTV asserts that such a requirement is unnecessary because DBS licensees will do this anyway, and thus is inconsistent with the Commission's desire to eliminate unnecessary regulations.[409] EchoStar states it subcontracts a portion of its DBS TT&C operations and should be permitted the flexibility to continue to do so.[410] EchoStar further argues that to deny this flexibility is inconsistent with the Commission's view of the DBS service as one that is available for licensing to relatively small companies and urges the Commission not to lose sight of factors that distinguish the DBS service from other services when incorporating Part 100 into Part 25.

123. The intent of Section 25.272(a), as currently applied to FSS operators, is to ensure control over the various services provided through an FSS system, and to prevent and/or promptly correct harmful interference incidents. Many FSS service providers can uplink to a single FSS system, and these services can use a variety of different carriers, thereby creating significant opportunities for interference events. The situation in the DBS service is not analogous. Unlike the thousands of FSS remote uplinks, there are generally only one or two uplink earth stations per DBS system. In addition, the types of transmissions are relatively uniform within the DBS service, further limiting opportunities for inadvertent uplink transmission errors. Moreover, although two DBS networks may be spatially co-located, the channelization scheme serves to mitigate the potential for interference events.[411] In addition, in the Part 25 rules the requirement to establish a network control center is applied only to the FSS; it is not applied to other satellite services that, like the DBS service, employ relatively few feeder links operating in conjunction with ubiquitously deployed receive earth stations (*e.g.*, Satellite Digital Audio Radio Service, Mobile Satellite Service). Considering these factors, and in light of our policy requiring coordination between U.S. DBS operators, at this time we do not find it necessary to apply a network control center requirement to DBS operators.

124. *Systems with technical parameters substantially different from those anticipated in the Plans.* The *Notice* sought comment on whether the implementation of systems with technical parameters substantially different from those anticipated in the Plans could result in harmful interference to other

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[407] *See Notice* at ¶ 48. *See also* 47 C.F.R. § 25.272. This rule establishes general inter-system coordination procedures.

[408] *See* Comments of Tempo at 4.

[409] *See, e.g.,* Comments of DIRECTV at 25.

[410] *See* Comments of EchoStar at 13.

[411] Even-numbered channels operate at one polarization, while odd-numbered channels operate at the other. Thus, there is no frequency overlap between co-polarized channels.

services.[412] The *Notice* also asked what level of interference protection should be afforded to DBS systems using parameters significantly different from those anticipated in the Plans.[413] SkyBridge asserts that rules are necessary to ensure that systems using significantly modified characteristics are adequately protected themselves, and do not threaten the entry of new DBS and other systems.[414] SkyBridge suggests that the Commission should develop new protection criteria applicable to modified U.S. DBS systems that take into account actual requirements of such systems.[415] SkyBridge offers as an example the protection limits in Annex 4 of Appendix 30[416] that it believes should not be applied to modified systems, because they are not linked in any way to the protection requirements of such systems.[417] DIRECTV disagrees with this assertion, stating that the existing level of protection should be preserved because future DBS technologies will require higher C/N ratios that may require protection at least to the levels specified in Annex 4 to Appendix 30.[418]

125. While many commenters addressed this issue,[419] none provided specific suggestions for revised sharing or protection criteria. We do not have sufficient information in this record to establish revised protection criteria for digital DBS systems. Internationally, WRC-2000 adopted new criteria for protection of BSS from non-geostationary satellite orbit fixed-satellite service ("NGSO FSS"). Another Commission proceeding has already addressed questions regarding sharing between NGSO FSS and BSS and adopted the protection criteria of WRC-2000.[420] These actions may alleviate SkyBridge's particular concern. In addition, in a separate proceeding the Commission recently addressed the issue of fixed service systems operating within the U.S sharing spectrum on a co-primary basis with NGSO FSS systems, and on a non-harmful interference basis with BSS systems operating in the 12 GHz frequency band.[421]

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[412] *See Notice* at ¶ 49.

[413] *Id.*

[414] Comments of SkyBridge at 4.

[415] Reply Comments of SkyBridge at 3.

[416] Annex 4 to Appendix 30 of the ITU Radio Regulations contains inter-regional power limits to protect BSS systems from interference from FSS systems using the same frequency band in another ITU Region. For example, Region 2 FSS systems operating in the 11.7-12.2 GHz band must respect limits to protect Region 1 BSS systems operating in the same frequency band.

[417] Comments of SkyBridge at 9. SkyBridge provides an example that, based on new modulation schemes, suggest that the required protection ratio is lower.

[418] Reply Comments of DIRECTV at 9.

[419] Comments of DIRECTV at 26; and Reply Comments of SkyBridge at 3.

[420] *See In the Matter of Amendment of Part 2 and 25 of the Commission Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range and Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates*, Report and Order, ET Docket No. 98-206, RM-9147, RM-9245, 16 FCC Rcd 4096 (2000) for discussion of these sharing issues.

[421] *See In the Matter of the Establishment of Policies and Service Rules for Non-Geostationary Satellite Orbit, Fixed Satellite Service in the Ku-band,* Report and Order, Further Notice of Proposed Rulemaking , IB Docket No. 01-96, FCC 02-123 (released April 26, 2002).

126. *Receive earth station antenna performance requirements.* The *Notice* requested comment on possible DBS receive earth station antenna performance requirements.[422] The Commission wants to ensure that U.S.-licensed DBS systems receive sufficient interference protection and that subscribers' receive antennas will work effectively in current and future radio frequency interference environments.[423] The *Notice* also asked whether the Commission should afford interference protection to DBS systems only to the extent that they meet certain receive antenna performance standards and it asked what type of regulation would be appropriate (*e.g.*, side-lobe suppression or minimum gain requirements). SkyBridge suggests that DBS receive earth station antennas should be required to satisfy, at a minimum, the sidelobe characteristics contained in Recommendation ITU-R BO.1213.[424] SkyBridge believes that such antenna performance requirements would ensure efficient use of the spectrum, thereby preserving valuable spectrum resources for future entrants.[425] DIRECTV, EchoStar and Primestar strongly oppose mandating compliance with the antenna patterns of Recommendation ITU-R BO.1213 because, they assert, it would be too costly, and is unnecessary.[426] DIRECTV further states that Recommendation ITU-R BO.1213 was adopted by the ITU-R for Regions 1 and 3 re-planning[427] and that there is no sound policy basis for applying such a pattern in Region 2.[428]

127. We are committed to giving DBS operators maximum technical flexibility, especially considering, as EchoStar points out, that earth station receive antenna size is a very important factor to potential consumers of DBS service.[429] We also are committed, however, to accommodating future entrants, including foreign entities, into our market.[430] Therefore, we seek to adopt regulations that achieve an appropriate balance between flexibility for DBS licensees while preserving opportunities for future entrants and ensuring protection of U.S. DBS systems from interference.

128. The receive earth station antenna sidelobe performance will affect the amount of interference into DBS receivers from other systems, including NGSO FSS systems. As discussed above, the ITU-R has examined the issue of interference into BSS receivers from NGSO FSS systems in great depth. Following extensive work in the ITU-R Study Groups, WRC-2000 adopted equivalent power flux density ("epfd↓") limits[431] to protect BSS receive antennas from NGSO FSS system interference.[432] Recently, the

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[422] *See Notice* at ¶ 51.

[423] *Id.* at ¶ 49.

[424] Comments of SkyBridge at 6. ITU-R Recommendation BO.1213 contains BSS receive earth station antenna patterns that were used at WRC-97 in revising the technical parameters on which the Regions 1 and 3 Plans are based. These patterns are not applied to Region 2.

[425] Comments of SkyBridge at 6.

[426] *See* Reply Comments of DIRECTV at 8; Reply Comments of EchoStar at 11-12; and Reply Comments of Primestar at 12.

[427] The WRC-2000 revised the Regions 1 and 3 BSS and feeder-link Plans to give 10 channels to each Region 1 country and 12 channels to each Region 3 country. The U.S. is in ITU Region 2, whose BSS and feeder-link Plans were not revised by WRC-2000.

[428] Reply Comments of DIRECTV at 9.

[429] Reply Comments of EchoStar at 12.

[430] *See Mexican Protocol*; *See also Argentine Protocol.*

[431] The equivalent power flux-density is defined as the sum of the power flux-densities produced at a geostationary-satellite system receive station on the Earth's surface or in the geostationary orbit, as appropriate, by (continued....)

Commission adopted these same epfd↓ limits as a domestic requirement.[433] These epfd↓ limits are calculated on the basis of the reference antenna patterns contained in Annex 1 to Recommendation ITU-R BO.1443.[434] We note that our newly adopted rules do not limit DBS networks to operating only with receive antennas conforming to the specific performance patterns contained in the referenced ITU-R Recommendation.[435] While the choice of receive antenna characteristics remains with the DBS operator however, the operator must accept any resulting interference from a NGSO-FSS network that is operating within the permitted epfd↓ values.[436] Hence, the DBS operator cannot claim protection from any interference it might receive beyond the level that would be received by a DBS earth station conforming to the referenced antenna patterns. We believe that these rules (*i.e.*, epfd↓ limits in conjunction with the associated reference antenna patterns) promote inter-service sharing and facilitate efficient use of spectrum while protecting BSS receive antennas from unacceptable levels of interference.

129. Service into the United States from future entrants such as non-U.S. DBS satellites could result in smaller satellite spacing than the current nine-degree separation between U.S. DBS orbital locations. The orbital spacing between satellites serving the same geographic area, combined with both the satellite transmit characteristics and receive earth station antenna performance, determines the amount of interference a DBS system will receive. DIRECTV states that the core characteristics of DBS service (high-quality, high-throughput, delivered to small, non-tracking antennas) argue against tight spacecraft spacing and the resulting interference limited links.[437] It cautions that any use of Region 2 orbital locations at less than 9-degrees separation must be studied very carefully.[438]

130. We are adopting proposed Section 25.114 (c)(22)(i), which requires that applicants provide sufficient technical showing that their proposed system could operate satisfactorily if all assignments in the BSS and feeder-link Plans are implemented. Moreover, in accordance with the International Radio Regulations, other countries wishing to serve the United States will normally have to modify their assignments in the ITU BSS and feeder-link Plans to allow them to provide service here. That process

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all the transmit stations within a non-geostationary-satellite system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction. *See* Final Acts of WRC-2000, Article 22, 22.5C.1.

[432] *See* Final Acts of WRC-2000, Article 22, Table S22-1D.

[433] *See In the Matter of Amendment of Part 2 and 25 of the Commission Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range and Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licensees and Their Affiliates*, Report and Order, ET Docket No. 98-206, RM-9147, RM-9245, FCC 00-418 at ¶188 (rel. December 8, 2000) ("*Skybridge Report and Order*").

[434] *See* Final Acts of WRC-2000, Article 22, No. S22.5C.11.

[435] The recommended antenna patterns are used as a reference standard for calculating permitted epfd↓ values from NGSO FSS systems. The DBS operator must use a receive antenna that can sufficiently reject NGSO FSS interference in this environment, however any number of antenna patterns can accomplish this result.

[436] *See* generally *Skybridge Report and Order* at ¶170-204 and Annex A, Final Rules §25.209(l)-(m).

[437] In an interference limited environment, the system performance is primarily a function of the carrier-to-interference (C/I) ratio and is largely independent of receiver noise power. As a practical matter however, the operator typically cannot significantly increase transmit power as a means of improving overall system performance.

[438] Comments of DIRECTV at 26.

will identify the U.S. DBS systems that are affected by the proposed Plan modification of another Administration.[439] The United States will have an opportunity to work with the Administration proposing the Plan modification to ensure protection of U.S. DBS systems. Considering these factors, we do not find it necessary to adopt DBS receive earth station antenna performance requirements at this time. We find that our existing rules should provide adequate protection of U.S. DBS systems, while still preserving options for future entrants.

131. *Tracking, Telemetry and Control.* In addition to the communications links used to provide DBS service to subscribers, the spacecraft also needs to exchange information with the ground that is specifically related to its operation. These communication exchanges include receiving commands from the ground and replying with information concerning the spacecraft's status and condition. These operations are referred to as telemetry, tracking and control ("TT&C") and normally require a relatively small amount of frequency bandwidth, in addition to that used for the delivery of the DBS services. The Region 2 BSS and feeder-link Plans provide 12 MHz of guardband[440] spectrum at the lower and upper edges of the 12.2-12.7 GHz downlink band, and at the upper and lower edges of the 17.3-17.8 GHz feeder-link band. The Plans allow these 12 MHz guardbands to be used for TT&C functions.[441] As a result of incorporating Part 100 into Part 25, Section 25.202(g) will now apply to DBS. This rule requires that TT&C functions be conducted at either or both edges of the allocated bands in which the licensee is providing service. We believe that Section 25.202(g) is consistent with the provisions of Appendices 30 and 30A of the International Radio Regulations and is consistent with our decision to require DBS licensees to operate in accordance with these Appendices.[442]

132. Commenters also request that we give DBS licensees the flexibility to use FSS frequencies,[443] in particular extended C-band,[444] for TT&C functions.[445] Other commenters request that we permit use of out-of-band frequencies for transfer orbit[446] TT&C operations.[447] Similarly, the Commission recognized

[439] Affected DBS systems will be determined on the basis of the limits contained in Annex 1 to Appendix 30.

[440] A guardband is defined as the portion of the frequency spectrum between the edge of the allocated band and the edge of the necessary bandwidth of the emission in the nearest channel. *See* Section 3.9.1 of Annex 5 to Appendix 30 and Section 4.1 of Annex 3 to Appendix 30A.

[441] The Plans leave 12 MHz of spectrum at both the lower and upper edges of the 12.2-12.7 GHz downlink band and at both edges of the 17.3-17.8 GHz feeder-link band for space operation functions. These 12 MHz bands are referred to as guardbands. *See* Section 3.9.2 of Annex 5 to Appendix 30, and Section 4.1 of Annex 3 to Appendix 30A.

[442] *See* new §25.148(f).

[443] We note that by definition BSS feeder links operate in the fixed-satellite service. The commenters' request to use additional FSS frequencies for TT&C functions refers to FSS allocations *other* than those already designated for use by BSS feeder links, *i.e.*, "traditional" FSS bands.

[444] The term extended C-band refers to frequencies in the 3400-3700 MHz, 5850-5725 MHz and 6425-6725 MHz bands.

[445] *See, e.g.*, Comments of EchoStar at 13.

[446] A transfer orbit is the orbit used to move the satellite from an initial low earth orbit to its final orbit. The transfer orbit used for placement in the geostationary orbit is appropriately known as Geostationary Transfer Orbit ("GTO"). A standard GTO, is an orbit that requires the minimum energy to reach geostationary altitude (*e.g.*, Hofmann transfer ellipse). The perigee corresponds to the altitude of the initial low earth orbit parking orbit, the apogee to the geostationary orbit altitude and the inclination is usually the inclination of the initial parking orbit. TT&C requirements during launch and transfer orbit can be different from those for in-orbit spacecraft. During (continued....)

in the *Notice* that DBS applicants have asserted that more world-wide facilities are available for transfer orbit operations in the various FSS bands than in the DBS band.[448] Use of FSS frequencies (other than those already designated for BSS feeder links) for DBS system TT&C functions is inconsistent with our rules requiring TT&C functions to be conducted at the allocated band edges.[449] In some cases it may also be inconsistent with the tri-lateral agreement between the United States, Canada and Mexico that precludes U.S. use of C- and Ku-band frequencies at certain orbital locations (*e.g.*, 110° W.L. and 119° W.L.).[450] Further, use of out-of-band frequencies for TT&C functions could cause harmful interference to U.S. licensees in other services in these bands. As stated above, we believe that the guardbands of the Plans provide sufficient spectrum for the on-orbit TT&C requirements DBS licensees. We recognize, however, that for transfer orbit operations, operators may seek to use different earth stations than those that will ultimately be used for on-orbit operations. In these cases, the earth station used for these relatively short-term transfer orbit TT&C functions may not operate in the edges of the DBS service bands.[451] Accordingly, we adopt our proposal to require TT&C functions for DBS systems to be conducted at the edges of the allocated bands, *i.e.*, 12.2-12.7 GHz (space-to-earth) and 17.3-17.8 GHz (earth-to-space). We will, however, evaluate requests to use FSS frequencies for transfer orbit TT&C operations on a case-by-case basis.

133. Additionally, DIRECTV requested that the Commission clarify that use of in-band TT&C frequencies applies only to 12 GHz DBS, and not to future DBS allocations.[452] With this *Report and Order*, we adopt a definition for DBS that clarifies that our DBS-specific rules apply only to 12 GHz DBS systems. We will address the use of other DBS frequency bands when service rules are promulgated for

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launch, a radar system is needed to determine the position of the spacecraft, and a flight termination command system is necessary in the event a launch vehicle must be destroyed. However, these communications are needed for a brief time period relative to in-orbit TT&C.

[447] *See, e.g.*, Comments of Tempo at 6.

[448] *Notice* at ¶ 52.

[449] *See* 47 C.F.R. § 25.202(g).

[450] *See* Public Notice, "Trilateral Agreement Regarding Use of The Geostationary Orbit Reached by Canada, Mexico and The United States," September 2, 1988.

[451] Because transfer orbit operations may occur at a location far from the final assigned orbital position, the earth station that will be used for on-orbit TT&C may not be available for transfer orbit TT&C. Operators may be required to use an earth station in another part of the world, which may not operate in the Region 2 BSS frequency bands. In addition, some operators prefer to use the services of companies that specifically provide transfer orbit TT&C.

[452] *See* Comments of DIRECTV at 27. DIRECTV notes that it has petitioned the Commission to use non-in-band frequencies for its proposed expansion in the 17.3-17.8 GHz band. *See* also, Application of DIRECTV Enterprises, Inc., for Authority to Construct, Launch and Operate an Expansion System of Direct Broadcast Satellites (June 5, 1997).

any future DBS allocations.[453] We note, however, that Section 25.202(g) of our rules requiring TT&C functions to be conducted at the allocated band edges applies generally to all satellite services.

134. *Feeder-Link Earth Station Coordination with Terrestrial Services in the United States.* As we stated in the *Notice*, in the United States a portion of the feeder-link spectrum, specifically the 17.7-17.8 GHz band, is shared with terrestrial services. The Commission recognized that the limited number of DBS feeder-link earth stations facilitates sharing between DBS feeder links and terrestrial services, and that such sharing had not been a problem in the past.[454] The *Notice* proposed to continue to apply the terrestrial coordination requirements currently in Part 25.[455] DIRECTV supported this proposal as reasonable.[456] The *Notice* further stated that Part 25 requirements in general apply only to commercial operators and recognized that coordination with the U.S. Government may also be required. In these instances, coordination with U.S. Government agencies will continue to be conducted through the normal inter-agency process.[457] We see no reason to deviate from our established coordination practices and we will apply our existing Part 25 coordination requirements or the inter-agency coordination process, as appropriate, to these sharing situations.

D. DBS Ownership

135. The *Notice* requested comment about whether, given the state of the DBS industry, the Commission should adopt rules imposing ownership restrictions on DBS licensees.[458] The *Notice* pointed out that the only ownership restriction the Commission had ever imposed on DBS was the "one-time" rule imposed in 1995 in connection with the auction of the licenses to use the 110° W.L. and 148° W.L. orbital locations.[459] That rule required divestiture within one year by a successful bidder for the 110° W.L. orbital position of any attributable interest in any channels at either of the other two orbital positions capable of serving the entire Continental U.S., the two "full-CONUS" locations (119° W.L. or 101° W.L. orbital locations).[460] The rule was intended to prevent any entity from having an attributable interest in more than one of the three DBS full-CONUS locations.[461] In the *DBS Auction Order,* the Commission did not adopt cable/DBS cross ownership limitations but did observe that its authority to approve transfers

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[453] The Commission recently adopted a domestic allocation in the 17.3-17.7 GHz band (space-to-earth) for the broadcasting-satellite service, and 24.75-25.25 GHz (earth-to-space) for the FSS, with use limited to feeder links for this BSS allocation. This allocation does not become effective until April 1, 2007 and service rules have not yet been developed. *See In the Matter of Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-3.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25 GHz Frequency Bands for Broadcast Satellite-Service Use*, Report and Order, IB Docket No. 98-172, 13 FCC Rcd 19923 (1998).

[454] *Notice* at ¶53.

[455] *Id.*

[456] Comments of DIRECTV at 28.

[457] *Notice* at ¶53.

[458] *Notice* at ¶ 58.

[459] *DBS Auction Order* at ¶ 52.

[460] *Notice* at ¶ 56 *citing DBS Auction Order* at ¶ 28.

[461] *Id.*

of control of licenses would enable it to address any competitive concerns raised by subsequent proposals by cable affiliated entities to acquire DBS spectrum.[462]

136. Therefore, in the *Notice* the Commission asked about several key issues.[463] The Commission asked parties to comment on the relevant product and geographic markets for evaluating DBS competition issues.[464] In addition, given the appropriate product and geographic markets and the current state of the DBS industry, it asked whether the Commission should impose DBS ownership or cross-ownership restrictions.[465] The *Notice* asked a number of more specific questions such as whether there should be any cross-ownership restrictions between cable TV and DBS systems, and in addition whether we should impose any overall ownership restrictions on DBS systems by themselves, specifically in terms of restricting ownership of satellites located in more than one full-CONUS orbital position. The *Notice* also asked whether, if the Commission were concerned about ownership or cross ownership, we should also be concerned about non-ownership relationships such as leases of DBS satellite transponders.

137. *The Need for Explicit Ownership Restrictions.* The *Notice* pointed out that, although the share of non-cable MVPD subscribers continues to rise, in 1997 cable subscribers still accounted for 87 percent of national MVPD subscribers whereas DBS subscribers only accounted for 9.8 percent of total national MVPD subscribers. Given the relatively small share of DBS subscribers in the MVPD market, and assuming that it is appropriate to analyze DBS ownership in the context of an overall MVPD marketplace, the *Notice* sought comment on whether it would be preferable to continue to address specific competition and public interest concerns related to DBS ownership on a case-by-case basis or whether we should promulgate ownership restrictions through specific rules.[466] Thus, the Commission asked whether or not it would be appropriate to impose DBS ownership and cross-ownership restrictions and if so, what kinds of restrictions should be imposed.[467]

138. Since cable systems currently have the largest share of MVPD viewers,[468] the *Notice* asked whether we should be primarily concerned about ownership by cable companies of other MVPD providers such as DBS, and therefore whether we should adopt specific restrictions on DBS/cable cross-ownership.[469] If so, what kinds of restrictions would be appropriate? For example, should there be a flat ban on cross-ownership of a DBS system by any cable system? If not, should we impose a rule that limits cross-ownership for cable operators with large market shares? Should such a limit be based on potential subscribers or actual penetration of the commonly owned services?[470] The *Notice* also sought comment

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[462] *DBS Auction Order* at ¶ 28.

[463] *Notice* at ¶ 65.

[464] *Notice* at ¶ 59.

[465] *Notice* at ¶ 58.

[466] *Notice* at ¶ 58.

[467] *Notice* at ¶ 61.

[468] *Id.* at ¶ 4.

[469] *Notice* at ¶ 61. It should be noted that the term "cross-ownership" is usually used to describe ownership of firms providing two different but related services or products, *e.g.*, "TV/newspaper cross-ownership." In this *Notice* we discuss DBS/cable cross-ownership even while noting that DBS and cable both compete in the provision of video distribution services in a broad MVPD market.

[470] *See Implementation of Section 11(c) of the Cable Television Consumer Protection and Competition Act of 1992,* MM Docket No. 92-264, 14 FCC Rcd 19098 (1999).

on whether certain non-ownership relationships, such as leasing arrangements should also be analyzed in terms of possible competitive concerns.[471] Finally, the *Notice* asked whether it should also be concerned about any one DBS firm controlling more than a single full-CONUS orbital position.[472]

139. As we noted in the *Further Notice of Proposed Rulemaking* ("*Cable Ownership FNPRM*"),[473] while cable remains the dominant medium, the industry is dynamic and evolving and marked by a decrease in cable's, and an increase in non-cable's, share of the MVPD market. Specifically, we noted that "cable's current share of MVPD subscribership has decreased to 80 percent, and non-cable's share has increased to 20 percent, of which 15 percent is attributable to DBS."[474] In the *Cable Ownership FNPRM*, we are seeking to reexamine our cable ownership limits in the wake of the D.C. Circuit decision in *Time Warner Entertainment Co. v. FCC*,[475] which reversed and remanded the cable horizontal and vertical limits and vacated two aspects of the cable attribution rules. The D.C. Circuit found, among other things, that in promulgating its cable horizontal and vertical limits, the Commission neither adequately took into account the evolving and increasingly competitive MVPD marketplace (particularly the impact of DBS on cable's market power), nor sufficiently supported its limits with a full record of empirical or theoretical evidence.[476]

140. The *Cable Ownership FNPRM* seeks to implement the Commission's statutory responsibilities under Section 613(f)[477] to develop structural cable limits that are reasonable and serve the public interest and to respond to the D.C. Circuit's concerns. The *Cable Ownership FNPRM* does not propose specific numerical caps or mathematical formulations to compute the structural limits, but rather considers general regulatory approaches and invites commenters to suggest alternative approaches. One of the regulatory approaches, the safe harbor or threshold approach, examines the current and anticipated state of effective competition in the MVPD marketplace and particularly relies upon DBS' presence and constraining impact on cable both in the upstream (program acquisition) and downstream (program distribution) markets.[478] In that context, the *Cable Ownership FNPRM* noted that a legislative proposal was

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[471] *Notice* at ¶ 61.

[472] *Notice* at ¶ 62.

[473] *See Implementation of Section 11 of the Cable Television Consumer Protection and Competition Act of 1992, Implementation of Cable Act Reform Provisions of the Telecommunications Act of 1996, the Commission's Cable Horizontal and Vertical Ownership Limits and Attribution Rules, Review of the Commission's Regulations Governing Attribution of Broadcast and Cable/MDS Interests, Review of the Commission's Regulations and Policies Affecting Investment in the Broadcast Industry, Reexamination of the Commission's Cross-Interest Policy*, CS Docket Nos. 98-82, 96-85, MM Docket Nos. 92-264, 94-150, 92-51 and 87-154, Further Notice of Proposed Rulemaking, 16 FCC Rcd 17312 (2001), ¶¶ 21-22 "*Cable Ownership FNPRM*").

[474] *Id.* at ¶ 21.

[475] *See Time Warner Entertainment Co. v. FCC*, 240 F.3d 1126 (D.C. Cir. 2001).

[476] Additionally, the D.C. Circuit found that the Commission did not adequately justify two aspects of its attribution rules (the elimination of the single majority shareholder exemption and the application of the limited partnership insulation rule, which barred limited partners from selling video programming to the general partner cable entity).

[477] 47 U.S.C. § 533(f).

[478] *See Cable Ownership FNPRM* at ¶¶ 60-73. Specifically, the safe harbor or threshold approach considers the state of competition in the MVPD marketplace, and would only enforce ownership limits in the absence of effective competition from cable and non-cable sources, particularly DBS.

considered, but not adopted in 1992, which would have required the Commission to adopt a cable/DBS cross-ownership restriction when DBS was available to 10 percent of the nation,[479] and that the Commission subsequently had solicited comment in this proceeding whether such a restriction was warranted.[480] Given that the safe harbor/threshold approach primarily relies on the presence of DBS as a gauge of effective competition and that the MVPD marketplace has changed since the Commission solicited comment on a possible DBS/cable cross-ownership restriction in this proceeding, the *Cable Ownership FNPRM* has sought further comment on whether such a restriction might be justified in connection with the possible adoption of the safe harbor/threshold approach.[481] We therefore will not consider a specific DBS/cable cross-ownership restriction at this time. In the event we do not adopt a safe harbor/threshold cable horizontal limit or do not further address a DBS/cable cross-ownership restriction in the *Cable Ownership FNPRM* proceeding, we may revisit the issue if circumstances so warrant in this docket or another proceeding.

141. *Non-Ownership Relationships.* In the *Notice,* the Commission also asked whether there are any non-ownership relationships, such as leasing arrangements, that ought to raise competitive concerns.[482] Only two parties, DIRECTV and EchoStar, commented on this question. DIRECTV asserts that when capacity leasing rises to the level of *de facto* control, competitive concerns arise. A lease of 100 percent of the capacity of a satellite might be one factor to suggest that an unauthorized transfer of control has taken place, according to DIRECTV.[483] EchoStar comments that "the Commission should pay close attention to arrangements such as leases of DBS resources or facilities to cable operators." It urges the Commission to scrutinize leases to determine whether they constitute an impermissible transfer of *de facto* control.[484] We received no comments on this issue beyond the two mentioned above. Thus, we decline to place any restrictions on the leasing of satellite transponders. However, the Commission will review specific allegations of situations in which leasing might lead to a *de facto* transfer of control.[485]

142. *Limitations on Control of Full-CONUS Orbital Positions.* Another issue raised in the *Notice* was whether, if DBS is considered to be part of a broader MVPD market, and particularly if the Commission were to adopt a DBS/cable cross-ownership rule, is there a reason to be additionally concerned if any one DBS system controls more than a certain aggregate number of channels or more

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[479] *See* S. Rep. No. 92, 102d Cong., 1st Sess. at 47 (1991)(proposing a DBS/cable cross-ownership restriction in order "to further diversity and prevent cable from warehousing its potential competition"). This proposal was not adopted because at the time DBS was authorized but not yet operational. As stated in the Conference Report:

In view of the fact that there are no DBS systems operating in the United States at this time, it would be premature to require the adoption of limitations now. However, the conferees expect the Commission to exercise its existing authority [under Section 613(c)] to adopt such limitations should it be determined that such limitations would serve the public interest.

Cable Television Consumer Protection and Competition Act of 1992, 102d Cong., 2d Sess. Conference Report 102-862, 82 (1992).

[480] *See Cable Ownership FNPRM* at ¶¶ 66-68.

[481] *Id.* at ¶ 68.

[482] *Notice* at ¶ 61.

[483] Comments of DIRECTV at 12-14.

[484] Reply Comments of EchoStar at 9.

[485] *See also Dominion Order.*

than a single DBS orbital position, especially a full-CONUS orbital position? For example, is it important that MVPD viewers have the option of choosing among several competing DBS systems?[486] Is it possible, for example, that the operation of several independently owned DBS systems could lead to a decline in the prices charged for DBS installation and service, and thus allow DBS to become a more significant competitor to cable systems? If so, does this suggest that there should be a ban on ownership of more than one DBS full-CONUS orbital position, regardless of whether a DBS operator has any cable or other MVPD interests? Should the three full-CONUS DBS positions allocated to the United States be analyzed differently from DTH-FSS positions that might be capable of reaching the entire continental U.S.? In considering rules regarding the control of DBS full-CONUS positions, how, if at all, should we take account of foreign-licensed satellites that are authorized to provide DBS service into the U.S.?[487]

143. Only a few parties commented on this issue. EchoStar commented that since the *DBS Auction Order*, there have been changes in satellite earth station receive antenna technology so that it is now possible for a single earth station antenna to receive service from satellites in two different full-CONUS orbital locations. Hence, allowing an entity to operate from more than one full-CONUS orbital location could make it more competitive with cable systems.[488] In contrast, Microcom of Alaska asserts that the Commission should only allow an entity to operate one full-CONUS location.[489] Microcom argues that such a rule would ensure that consumers had choices in service providers and that DBS spectrum would continue to be used to enhance competition in the video program market.[490] According to Microcom, in large parts of Alaska there is no alternative to satellite DBS delivery.[491] UCC suggests that perhaps in the future the Commission should place a ban on the operation of more than one full-CONUS orbital position, although UCC did not propose that the Commission impose such a restriction at this time.[492]

144. As we noted in recent orders, because cable operators are investing in fiber optic cable and converting to digital technologies which will enable them to expand their channel capacity and program offerings, we have found that it was appropriate to allow DBS licenses to acquire additional satellite capacity in order to better compete with cable systems.[493] As a result of the series of mergers and acquisitions transactions approved by the Commission in 1999, DIRECTV is now authorized to operate channels at three full-CONUS orbital positions, and EchoStar is authorized to operate channels at two full-CONUS orbital positions. On December 3, 2001, the Commission received applications requesting consent to the transfer of control of licenses and authorizations of Hughes Electronics Corporation and its

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[486] *Notice* at ¶ 63.

[487] As noted above, the United States has reached an agreement with Mexico and Argentina to allow DBS and DTH-FSS satellites licensed by either country to provide service into each other's territory. Also, as stated in the Commission's *DISCO II* order, foreign-licensed satellites will be able to provide DBS and DTH-FSS in the U.S. if the country licensing the satellite in question offers effective competitive opportunities to U.S.-licensed satellites in its home market. *DISCO II* at ¶ 98.

[488] Comments of EchoStar at 7; Reply Comments of EchoStar at 6.

[489] Comments of Microcom at 9.

[490] Comments of Microcom at 9.

[491] Comments of Microcom at 2.

[492] Comments of UCC at 3.

[493] *EchoStar/MCI Order* at ¶ 22. *See also PrimeStar Order* at ¶ 22.

subsidiaries, including DIRECTV by EchoStar.[494] As of March, 2001, DIRECTV offers an oval satellite antenna that is capable of receiving signals from two different satellites.[495] Hence, because we continue to view DBS as offering a strong competitive alternative to cable systems, we have not found any competitive problems with allowing a DBS operator to operate in more than one full-CONUS orbital position, and indeed allowing such operation may enable DBS operators to better compete with cable systems in the future. Consequently, we will not adopt any restrictions on the number of full-CONUS orbital locations one satellite company can control.

E. Ancillary Uses of DBS Spectrum

145. Under the Commission's ancillary use policy, a DBS operator must begin DBS operations within five years after receipt of its license, but may otherwise make unrestricted use of the spectrum during that time.[496] After this initial five-year period, a DBS licensee "may continue providing non-DBS service during the remainder of the life of its first satellites only on those transponders on which [it] continues to provide DBS service, and that non-DBS use cannot exceed fifty percent of each 24-hour period on any such transponder."[497] In accordance with this policy, the Commission stated that it would consider continuing "to permit some degree of non-conforming use of DBS satellites during future generations given the circumstances prevailing at that time."[498]

146. In December 2000, the Commission sought comment on the issue of non-conforming satellite use of DBS spectrum, supplementing the record in this proceeding.[499] Among other things, the Commission sought comment on whether it should eliminate, relax, or maintain time or other restrictions on uses of DBS spectrum. It also sought comment on the appropriateness of restrictions on satellite use at those locations in the western arc that are currently underutilized or whether restrictions should be relaxed for all orbit locations. It asked commenters to address whether permitting flexible use of DBS spectrum would enhance or impede competition in the MVPD market and sought information on what non-video services could be provided. The Commission requested commenters to address whether ,and to what extent, permitting other uses of DBS spectrum could impact the Commission's geographic service rules. Finally, the Commission asked if a flexible use policy should extend to foreign-licensed facilities that are permitted to serve the United States.

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[494] *See* Public Notice, EchoStar Communications Corporation, General Motors Corporation, and Hughes Electronics Corporation Seek FCC Consent For a Proposed Transfer of Control, CS Docket No. 01-348, DA 01-3005 (rel. January 10, 2002).

[495] *See* http://www.directv.com/about/abouttablepages/0,1271,77,00.html (visited on March 6, 2001).

[496] *See The Commission Requests Further Comment in Part 100 Rulemaking Proceeding on Non-Conforming Uses of Direct Broadcast Satellite Service Spectrum*, FCC 00-426 (rel. December 8, 2000) *("DBS Ancillary Uses PN") DBS Auction. See also In re Petition of United States Satellite Broadcasting Company, Inc. for Declaratory Ruling Regarding Permissible Uses of the Direct Broadcast Satellite Service*, 1 FCC Rcd 977, 977 (1986) *("USSB Declaratory Ruling")* where USSB asked the Commission to clarify its earlier statements regarding permissible uses of facilities authorized to provide DBS. USSB sought a declaratory ruling that DBS licensees would be permitted to provide data, voice communications and other non-video services if necessary to support the development of its proposed operations. The Commission stated that non-conforming uses are limited by the technical and temporal restrictions outlined in the order.

[497] *See DBS Ancillary Uses PN citing USSB Declaratory Ruling* at ¶ 12. *See also DBS Auction Order* at ¶ 17.

[498] *See DBS Ancillary Uses PN citing USSB Declaratory Ruling* at ¶ 13.

[499] *See DBS Ancillary Uses PN.*

147. The few comments addressing this issue generally supported some degree of relaxation of the Commission's non-conforming use policy.[500] The States of Alaska and Hawaii and EchoStar agree that it is important to encourage increased use of DBS spectrum to satisfy consumer demand for more services.[501] EchoStar supports eliminating all existing regulatory impediments hindering flexible use of DBS spectrum by DBS licensees.[502] It states that because DBS spectrum is limited, spectrum efficiency becomes more important to give providers the ability to offer additional services to consumers.[503] For instance, EchoStar has taken advantage of the existing flexibility afforded to DBS operators by providing data services in combination with video services.[504]

148. We agree that allowing non-conforming satellite use of DBS spectrum is consistent with the Commission's spectrum management policies, which favor greater options and choices for consumers.[505] We conclude that the relaxation of use restrictions will encourage development of new telecommunications products and services. The Commission has taken a number of steps to provide more flexibility and eliminate unnecessary burdens in a variety of services.[506] Such expansion may also increase efficient use of spectrum as a whole. As stated in the Commission's *Spectrum Policy Statement*, "flexible allocations may result in more efficient spectrum markets. Flexibility can be permitted through the use of relaxed service rules, which would allow licensees greater freedom in determining the specific services to be offered."[507] Similarly, the Commission has stated that "a robust and effective secondary market for spectrum usage rights could help alleviate spectrum shortages by making unused or underutilized spectrum held by existing licensees more readily available to other users and uses and help to promote the development of new, spectrum efficient technologies."[508] In addition, non-conforming uses are consistent with the ITU regulations that allow for FSS service from DBS orbital positions if it does not exceed certain power levels.[509] Consistent with these policies, we conclude that the public interest is best served by allowing more flexible use of DBS spectrum.

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[500] Comments of Hawaii at 1; Supplemental Comments of EchoStar Satellite Corporation at 1; and Comments of Alaska at 1.

[501] *See* Reply Comments of EchoStar Satellite Corporation at 4; and Comments of Hawaii at 2.

[502] *See* Supplemental Comments of EchoStar Satellite Corporation at 1. *See* Reply Comments of EchoStar Satellite Corporation at 1. Comments of Hawaii (2001) at 2.

[503] *See* Reply Comments of EchoStar Satellite Corporation at 4.

[504] *See* Supplemental Comments of EchoStar Satellite Corporation at 2.

[505] *See* Comments of EchoStar Satellite Corporation at 1. *See also* Reply Comments of EchoStar Satellite Corporation at 4.

[506] *See In the Matter of Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, WT Docket No. 00-230, Notice of Proposed Rulemaking, 15 FCC Rcd 24203 (rel. November 27, 2000) *("Secondary Markets Notice")*.

[507] *See Secondary Markets Notice* at ¶ 93 *citing* , *Principles of Spectrum to Encourage the Development of Telecommunication Technologies for the New Millennium*, Policy Statement, 14 FCC Rcd at 19870-71 at ¶ 9.

[508] *See In the Matter of Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets*, Policy Statement, 15 FCC Rcd 24178 at ¶ 2.

[509] *See* No. 5.492 of the International Radio Regulations.

149. We requested comment on whether a flexible use policy will help ensure that currently unused western locations are put to use and, in addition, whether we should apply a flexible use policy to all of the orbital locations available for DBS service or only to the western orbital locations. We also sought comment on the appropriateness of such restrictions before and after the initial five years of the license term, particularly at those orbital locations in the western arc that are currently not being used. Two DBS licensees are providing full and robust DBS service from locations capable of serving all the contiguous United States ("CONUS"), and one that sees most of the eastern half of the continental United States, but locations in the western portion of the orbital arc that are not capable of serving the east coast remain unused.

150. The States of Alaska and Hawaii assert that any non-conforming use policy that is adopted should apply to only the western locations and argue that the current non-conforming use rules should remain intact for satellites in the full-CONUS slots (*i.e.*, 101° W.L., 110° W.L. and 119° W.L.). Hawaii states that permitting DBS licensees to use full-CONUS slots to provide even less DBS programming would only increase their incentive to evade the Commission's public interest programming requirements.[510] EchoStar agrees that, indeed, additional flexibility for DBS spectrum will increase the viability of non-CONUS DBS orbital locations.[511] At the same time, however, EchoStar states that it would be wrong to remove the current limits only for the western orbital locations and argues in favor of flexibility for all orbital locations.[512] EchoStar contends that relaxation of the non-conforming use policy will not reduce satellite deployment for both CONUS or non-CONUS locations.[513]

151. Relaxation of restrictions for the western channels may ensure that valuable spectrum is not being wasted. Also, consistent with the Commission's spectrum management policies, we conclude that relaxing restrictions will promote greater spectrum efficiency by allowing licensees to determine which satellite services would be most valuable to their customers. Licensees may well develop new and innovative uses or pair DBS video services with other service offerings. Making better use of unused satellite spectrum, such as the western channels, could provide an incentive to offer niche services to areas in the west as well as to Alaska and Hawaii.[514]

152. We believe that greater flexibility for channel use at all the DBS orbital locations will help operators to compete with other MVPD providers, that have no similar use restrictions. Cable operators have been upgrading their networks at a rapid pace to add new services such as video-on-demand, telephony, and Internet and high-speed data services.[515] Moreover, satellite providers are developing broadband services.[516] Allowing other uses of DBS spectrum may, for example, enable licensees to develop a group of profitable services in a situation in which providing only DBS services would not be profitable. We note that two DBS operators have begun offering two-way consumer broadband data

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[510] *Id.*

[511] *See* Supplemental Comments of EchoStar Satellite Corporation at 3.

[512] *Id.*

[513] *See* Reply Comments of EchoStar Satellite Corporation at 1.

[514] *See In the Matter of Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, FCC 00-402, WT Docket No. 00-230 (rel. November 27, 2000) *("Secondary Markets Notice")*.

[515] *See 2001 Cable Competition Report* at ¶ ¶ 34-54.

[516] *Id.* at ¶ 37.

offerings. DirecPC from Hughes and Starband, in partnership with Gilat, EchoStar and Microsoft have both begun offering two-way consumer Internet access using Ku-band satellite but not on DBS frequencies.[517] To compete with cable, satellite operators can rely on the relaxed use rules that we adopt here to expand their broadband services, using their downlink allocation in conjunction with other frequency assignments. As EchoStar points out, consumer needs and demands have changed dramatically. Where in the past consumers received only video services from their cable operator they are now receiving a variety of enhanced services including data access and high-speed Internet access. To maximize use of DBS spectrum and to provide DBS licensees the ability to provide expanded service offerings to better compete with cable, we conclude that more flexibility in the use of all DBS locations is warranted.

153. We also requested comment on whether relaxed uses should be limited to other fixed-satellite service ("FSS"), as permitted by the U.S. Table of Frequency Allocations.[518] Moreover, if we allow non-conforming uses of DBS spectrum, should we require those services to conform to the interference criteria associated with DBS, the primary service. EchoStar contends that there are no interference concerns implicated in allowing non-conforming uses of DBS spectrum.[519] EchoStar states that all DBS licensees must show that these services do not cause harmful interference in the first place. We received no other comments on frequency allocation or interference issues. Under present policy, we have permitted non-conforming uses for an initial five-year period, and with certain limitations, for the remainder of the first satellite's lifetime. These uses have been subject to the interference criteria associated with the DBS service. We are aware of no instances of harmful interference caused by non-conforming services that have arisen under this approach and thus we will not adopt different interference criteria for non-conforming uses of DBS spectrum.

154. Finally, we requested comment on whether we should relax use restrictions for foreign-licensed facilities that are permitted to serve the United States (*e.g.*, those satellite systems licensed in Argentina and Mexico).[520] The States of Alaska and Hawaii maintain that both U.S.-licensed and non-U.S.-licensed DBS operators should be permitted to use non-full CONUS (*i.e.* western orbital locations) orbital slots to provide any direct-to-consumer services of any type subject to strict requirements.[521] Hawaii urges the Commission to mandate that DBS providers serving foreign countries also provide equal service available to the States of Alaska, Hawaii, and as much of the continental United States as is technically feasible (*i.e.* any and all services provided to non-U.S. residents utilizing the western (non CONUS) DBS locations should be made available to Alaska and Hawaii).[522] The Commission permits certain non-U.S. DBS operators to provide service to U.S. residents, subject to the same rules as domestic providers. We conclude non-U.S. licensed DBS providers should have the same flexibility as U.S. licensed providers to tailor their service offerings to consumer demand. Thus non-U.S. licensees can provide the same variety of customer offerings as a U.S. licensees subject to technical and legal requirements and they must offer these services to Alaska and Hawaii if it is technically feasible to do

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[517] *See also* Satellite Communications Industry Overview, Bus Tour, A Quantitative Overview of the Satellite Industry: Growth Driven by Media Services (First Quarter 2001) at 22-28.

[518] *See DBS Ancillary Uses PN* at 2; *see also* 47 C.F.R. § 2.106.

[519] *See* Supplemental Comments of EchoStar Satellite Corporation at 3; Supplemental Comments of Alaska at 2.

[520] *See DBS Ancillary Uses PN* at 3. *See Mexican* Protocol; *See also Argentine Protocol.*

[521] *See* Comments of Hawaii at 3 and 6; and Supplemental Reply Comments of Alaska at 1.

[522] Comments of Hawaii at 7.

so.[523] We decline to mandate DBS operators provide the same services to Alaska and Hawaii that they provide to non-U.S. countries. Requiring the same service to Alaska and Hawaii as is offered to foreign countries would be an additional requirement placed on U.S. DBS operators providing service to non-U.S. countries that would not apply to non-U.S. licensed DBS operators providing service to the United States. Therefore, we decline to impose such different regulation.

155. We conclude that we will allow non-conforming satellite use for all orbital locations, including the western orbital locations, for downlink satellite services that meet the technical requirements for interference protection. Therefore, DBS licensees are free to provide non-conforming services on as many transponders on any of their satellites for as large a fraction of the time as they wish subject to the Commission's other requirements for DBS.

IV. CONCLUSION

156. By our action today, we adopt policies and regulations that are pro-competitive and deregulatory in nature. These rules are designed to make DBS a more competitive service by streamlining and clarifying the rules for DBS providers. By incorporating the Part 100 rules into Part 25 of the Commission's rules we harmonize the DBS licensing process with the licensing process for other services. Moreover, we believe that these rules will serve the public interest by promoting fair and effective competition in the MVPD market which, in turn, will result in consumer benefits such as more service offerings, better consumer service, and competitive prices. In addition, these rules promote the development of creative and new service offerings by relaxing the rule for non-conforming use of DBS spectrum.

V. PROCEDURAL MATTERS

A. Final Regulatory Flexibility Certification

157. The Regulatory Flexibility Act of 1980, as amended ("RFA"),[524] requires that a regulatory flexibility analysis be prepared for notice and comment rule making proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."[525] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[526] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[527] A "small business concern" is one which: (1) is independently owned and

[523] *See DBS Ancillary Uses PN* at 3. *See Mexican Protocol*; *See also Argentine Protocol.*

[524] The RFA, *see* 5 U.S.C. § 601 – 612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[525] 5 U.S.C. § 605(b).

[526] 5 U.S.C. § 601(6).

[527] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration ("SBA").[528]

158. As required by the RFA,[529] an Initial Regulatory Flexibility Analysis ("IRFA") was incorporated in the *Notice of Proposed Rulemaking* ("*Notice*") in IB Docket No. 98-21.[530] The Commission sought written public comments on the proposals in the Notice including comments on the IRFA. There were no comments, which discussed or addressed the IRFA; nor were there comments on the effect of the proposed rules on small businesses. Nonetheless, the Commission considered the potential significant economic impact of the proposed rules on small entities.

159. In this Report and Order the Commission streamlines and harmonizes the Commission's direct broadcast satellite ("DBS") service rules with other regulations governing satellite communications. Our objective is to consolidate, where possible, the DBS services rules with the rules for other satellite services and eliminate separate, DBS-specific rules in Part 100 of the Commission's rules. Because DBS provides subscription services, DBS falls within the SBA-recognized definitions of "Cable Networks" and "Cable and Other Program Distribution."[531] These definitions provide that small entities are ones with $11.0 million or less in annual receipts.[532] Small businesses, *i.e.* ones with less than $11.0 million in annual receipts, do not have the financial ability to become DBS licensees because of the high implementation costs associated with satellite services. Because this is an established service, with limited spectrum and orbital resources for assignment, we estimate that no more than 15 entities will be Commission licensees providing these services. In addition, because of the high implementation costs and the limited spectrum resources we believe that none of the 15 licensees will be small entities. We expect that no small entities will be impacted by this rulemaking. Therefore, we certify that the requirements of the Report and Order will not have a significant economic impact on a substantial number of small entities.

160. The Commission will send a copy of the Report and Order, including a copy of this Final Regulatory Flexibility Certification, in a report to Congress pursuant to the Congressional Review Act.[533] In addition, the *Report and Order* and this final certification will be sent to the Chief Counsel for Advocacy of the SBA, and will be published in the Federal Register.[534]

B. Paperwork Reduction Act Analysis.

161. This Order contains proposed new and modified information collections. As part of its continuing effort to reduce paperwork burdens, we invite the general public and the Office of Management and Budget (OMB) to take this opportunity to comment on the information collections

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528 15 U.S.C. § 632.

529 *See* 5 U.S.C. § 603.

530 *See In re Policies and Rules for the Direct Broadcast Satellite Service*, Notice of Proposed Rulemaking, IB Docket No. 98-21, 13 FCC Rcd 6907 (1998).

531 13 CFR § 121.201, North American Industry Classification Systems (NAICS) codes 513210 and 513220.

532 13 CFR § 121.201, NAICS codes 513210 and 513220.

533 *See* 5 U.S.C. § 801(a)(1)(A).

534 *See* 5 U.S.C. § 605(b).

contained in this Order, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

162. Written comments on the proposed new and modified information collections must be submitted on or before 60 days after date of publication in the Federal Register. A copy of any comments on the information collections contained herein should be submitted to Judy Boley Herman, Federal Communications Commission, Room 1-C804, 445 12th Street, SW, Washington, DC 20554, or via the Internet to jboley@fcc.gov.

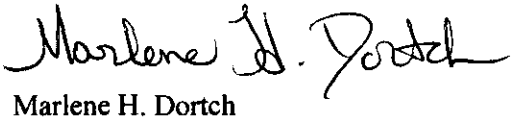
VI. ORDERING CLAUSES

163. Accordingly, IT IS ORDERED, pursuant to Sections 4(i), 7(a), 11, 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 157(a), 161, 303(c), 303(f), 303(g), 303(r), that this Report and Order is hereby ADOPTED.

164. Accordingly, IT IS ORDERED that Part 25 of the Commission's rules is amended as specified in Appendix B, effective 30 days after publication in the Federal Register.

165. IT IS FURTHER ORDERED that the Consumer Information Bureau, Reference Information Center, SHALL SEND a copy of this Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION



Marlene H. Dortch
Secretary